

given moving power, so that it may bear, in the proper degree, and in the proper order, upon some assigned objects, and produce some particular effect. The whole of the apparatus employed with this intention, however numerous may be its parts, however various the forms of its wheels, its levers, or its pulleys, and however complicated may be their connexions, resolves itself into a series of intermediate instruments for the transference of motion from the source of power, or the point where its action is impressed, to the parts which are designed ultimately to receive the action of the force employed. It is an established principle in physics, that mere machinery is incapable of generating mechanical force, and that such force must always be originally derived from some extraneous source. Some impulse from without, whether it be the pressure of the wind, the fall of a stream of water, or the action of men or horses, or any other kind of foreign agency must be resorted to, both to set the engine in motion, and to continue its movements when they are once begun. Nor is the case essentially different when the source of motion apparently resides in some internal part of the machine itself; in a watch, for instance, which is actuated by the main spring; or in a steam engine, which is set in motion by the elastic vapour contained in its cylinder: the spring in the one case, and the vapour in the other, although they may in one sense be regarded as impelling powers, are in reality, but intermediate agents in the distribution of a force originating from other sources. In the watch, the force may be traced to the hand which coiled the spring: in the steam engine to the fire, which has imparted elasticity to the vapour.

The living body differs from inorganic machinery in containing within itself a principle of motion not referrible, as far as we can perceive, to any of the primary forces which exist in the inanimate world. This principle has been termed *contractility*. In animals of the simplest construction, every part of the substance of the body seems to be equally endowed with this contractile property, although exhibiting no distinct appearance of a fibrous structure. This